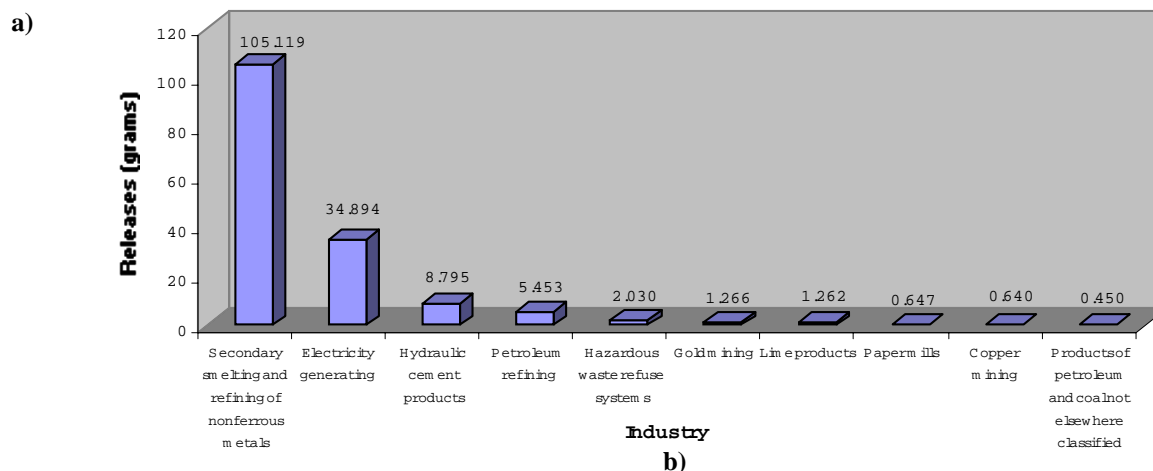




# Dioxin Report: 2001 Toxics Release Inventory

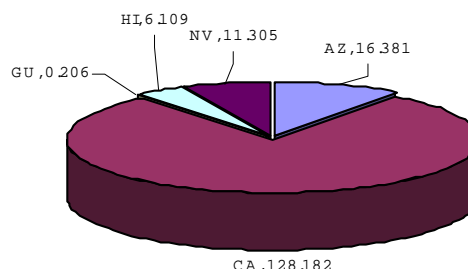
**U.S. EPA Region 9**  
Arizona, California,  
Hawaii, Nevada,  
and the Pacific  
Islands

On- and Off-site Dioxin Releases



**Note:** On- and off-site releases is defined as the amount of toxic chemical releases on-site (to air, water, underground injection, landfills and other land disposal), and the amount transferred off-site for disposal. Chart **a** shows dioxin releases (in grams) for the top industries. Chart **b** gives state/territory totals for on- and off-site dioxin releases (in grams).

On- and Off-site Releases of Dioxin by State/Territory



## Dioxin and the 2001 TRI Data

The U.S. Environmental Protection Agency has just made public its data on toxic chemicals that were released\* to the air, water and land within the Pacific Southwest Region (Region 9) during the year 2001. This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program.

In the year 2000, the TRI was expanded to include additional persistent, bioaccumulative and toxic (PBT) chemicals, and required reporting for these chemicals at

lower thresholds. PBT pollutants are toxic chemicals that persist in the environment and bioaccumulate in food chains, thus posing risks to human health and ecosystems. One of these newly added PBT chemical categories is 'dioxin and dioxin-like compounds.'

## Dioxin and Dioxin-like Compounds

Though the term 'dioxin and dioxin-like compounds' refers loosely to a group of several hundred compounds that share similar chemical structure and biological characteristics, under the TRI program this phrase refers to a list of 17 specific compounds that have similar properties and health effects, and only information for these compounds is collected.

\* Release is defined as the amount of a toxic chemical released on-site (to air, water, underground injection, landfills and other land disposal), and the amount transferred off-site for disposal.

Data Characteristics

The total mass of the 17 compounds that make up the category is reported in grams. Facilities were given the option of reporting data on the percentage distribution of the 17 compounds, or congeners, that make up their releases. Some facilities provided this information.

Toxicity and TEQ

Each dioxin and dioxin-like compound has a different toxicity, and toxicity can differ by a factor of 10,000. Scientists use a shorthand method of assessing the toxicity of different mixtures by comparing them to the most toxic compound, a method called "Toxicity Equivalence," or TEQ. While some dioxin inventories collect data in TEQs, the TRI data is in grams of total dioxin and dioxin-like compounds.

Sources Covered by this Report

Only certain types of facilities are required to report chemical releases to the TRI program. As such, the TRI data on releases of dioxin and dioxin-like compounds are limited to releases from TRI-covered industry sectors, which are manufacturing, metal and coal mining, electricity generation (coal and oil fired only), commercial hazardous waste treatment, solvent recovery, petroleum bulk terminals, and wholesale chemical distributors. The reporting threshold for dioxin is 0.1 grams manufactured, processed, or otherwise used.

A Note on Risk

It is important to note that release should not be directly equated with risk. To evaluate risk, release data must be combined with information about chemical toxicity, site-specific conditions, and exposure. In the case of dioxin and dioxin-like compounds, EPA estimates that most exposure comes through the diet, with over 95% coming through dietary intake of animal fats.

The TRI data does not indicate whether a facility is violating environmental laws. The majority of the major industrial sources of dioxin are subject to strict controls. In this country, there has been an 80% reduction in known emissions from 1987 to 1995, and with existing regulations, a 90% reduction is anticipated by the year 2004.

Releases

The TRI data for 2001 suggests that releases of dioxin and dioxin-like compounds from TRI-regulated industries are lower for Region 9 states than for most other states in the U.S. In a state-by-state comparison California, Arizona, Nevada and Hawaii ranked 21, 38, 43 and 46, respectively for total on- and off-site

releases.

**Dioxin Releases (in grams) by State or U.S. Territory**

<i>State</i>	<i>Air</i>	<i>Water</i>	<i>Land</i>	<i>Off-Site Release</i>	<i>Total On- and Off-Site</i>
AZ	16.368	0.000	0.013	0.000	16.381
CA	22.234	0.850	2.097	103.000	128.182
HI	5.109	0.000	0.000	1.000	6.109
NV	11.305	0.000	0.000	0.000	11.305
GU	0.206	0.000	0.000	0.000	0.206

Releases in grams, not weighted by Toxicity Equivalents (TEQ)

**Reporting Industry Sectors—the 2001 Data**

The 2001 TRI data suggest that among the TRI-regulated industry sectors, nonferrous metal smelting and electricity generation are the largest contributors of dioxin releases in the Region. The Portland cement manufacturing and lime production industry and petroleum refining are the third and fourth largest contributors, respectively. Together, these four industry sectors account for 96% of the dioxin and dioxin-like compounds reported in Region 9.

**Dioxin Releases (in grams) by Industry Sector**

<i>Industry</i>	<i>Air</i>	<i>Water</i>	<i>Land</i>	<i>Off-site Releases</i>	<i>Total On- and Off-site</i>
Secondary smelting refining of nonferrous metals	3.119	0.000	0.000	102.000	105.119
Electricity generating	33.894	0.001	0.000	1.000	34.894
Hydraulic cement products	8.795	0.000	0.000	0.000	8.795
Petroleum refining	3.636	0.817	0.000	1.000	5.453
Hazardous waste refuse systems	0.016	0.000	2.014	0.000	2.030
Gold mining	1.266	0.000	0.000	0.000	1.266
Lime products	1.262	0.000	0.000	0.000	1.262
Paper mills	0.602	0.032	0.013	0.000	0.647
Copper mining	0.640	0.000	0.000	0.000	0.640
Products of petroleum and coal not elsewhere classified	0.450	0.000	0.000	0.000	0.450

Releases reported in Arizona, California, Hawaii, and Nevada, in total grams, not weighted for TEQ.

**Electricity Generating Facilities**

In this industry, dioxins and dioxin-like compounds can be formed as unwanted byproducts during the combustion process. Only facilities that combust coal or oil to generate electricity for distribution in commerce are required to report to the Toxics Release

Inventory. In the Pacific Southwest Region, 27 electricity generating facilities reported 34.89 grams of dioxin releases, or 22% of the regional total.

### ***Nonferrous Metal Smelting and Iron Foundries***

In the metals industry, dioxin and dioxin-like compounds may be generated as an unwanted byproduct during the high temperature secondary smelting process. Another potential dioxin source is on-site fossil fuel combustion. In the Region, seven secondary smelters and one iron foundry reported 105.31 grams of dioxin releases. On-site air releases amounted to 3.31 grams and the remainder was reported to off-site disposal.

### ***Petroleum Refineries***

Dioxin and dioxin-like compounds may be formed in petroleum refining from the combustion of fossil fuels and during certain catalyst regeneration processes. Refineries that utilize continuous catalyst regeneration are more likely to exceed the reporting threshold for dioxin and dioxin-like compounds than facilities using semi-continuous catalyst regeneration processes. In Region 9, six facilities in the petroleum refining and related industries reported 5.62 grams of dioxin releases.

### ***Concrete Products***

The heating of raw materials used in the manufacture of cement may result in the formation of dioxins. In the Region, nine hydraulic cement facilities and three lime facilities reported 10.06 grams of dioxin and dioxin-like compounds.

### **Top Facilities for Releases**

The top 10 facilities for total on- and off-site releases in Region 9 are:

Ø TST, Inc. (80.39 grams) Fontana, California, San Bernardino County

U Light Metals, Inc. (22.18 grams) City of Industry, California, Los Angeles County

U Cemex California Cement LLC (5.36 grams) Victorville, California, San Bernardino County

U Springerville Generating Station (5.10 grams) Springerville, Arizona, Apache County

U Navajo Generating Station (3.68 grams) Page, Arizona, Coconino County

Y Cabrillo Power LLC Encina Power Plant (3.64 grams) Carlsbad, California, San Diego County

Ö Nevada Power Reid Gardner Station (3.00 grams) Moapa, Nevada, Clark County

Ö Hawaiian Electric Inds, Inc (2.60 grams) Kapolei,

Hawaii, Honolulu County

Ö North Valmy Station (2.55 grams) Valmy, Nevada, Humboldt County

Ö Tosco Refining Co. Santa Maria Facility Carbon Plant (2.70 grams) Arroyo Grande, California, San Luis Obispo County

### **2001 Top Region 9 Counties for On-site Releases**

<i>County</i>	<i>State</i>	<i>On-site Release (grams)</i>
San Bernardino	California	9.541
Apache	Arizona	6.595
Clark	Nevada	6.180
Honolulu	Hawaii	3.881
Coconino	Arizona	3.678
San Diego	California	3.640
Kern	California	2.885
Humboldt	Nevada	2.550
San Luis Obispo	California	2.400
Los Angeles	California	1.845

### **On-line Access**

For national information on data release, see:

<http://www.epa.gov/tri>

The TRI data is available through the Envirofacts Warehouse, EPA's premier Internet site for distributing environmental information at:

<http://www.epa.gov/enviro> or the TRI Explorer tool: <http://www.epa.gov/triexplorer>

For general information on the Toxics Release Inventory, including reporting requirements for businesses, go to:

<http://www.epa.gov/region09/toxic/tri>

For additional information on dioxin and associated risk, go to:

[www.epa.gov/ncea/dioxin.htm](http://www.epa.gov/ncea/dioxin.htm)

**Information and Assistance**

We will be more than happy to answer your questions and assist you in learning more about the Toxics Release Inventory program in Region 9.

**U.S. EPA Region 9 TRI Coordinator**  
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